Figure 4A is a diagrammatical representation of a thick walled cylinder used in an analytical model during the development of the present invention;

Figure 4B is a diagrammatical representation of a single model element of the thick walled cylinder shown in Figure 4A;

Figure 4C is a diagrammatical representation of boundary conditions of the element shown in Figure 4B;

Figure 5A-1 is a graphical representation of the distribution of circumferential stress for 10 and 50 buffer wrappings of a thick walled cylinder as shown in Figure 4A, along the roll radius;

Figure 5A-2 is a graphical representation of the distribution of radial stress for 10 and 50 buffer wrappings of a thick walled cylinder as shown in Figure 4A, along the roll radius;

Figure 5A-3 is a graphical representation of the distribution of circumferential and radial stress for 10 and 50 buffer wrappings of a thick walled cylinder as shown in Figure 4A, along the roll radius;

Figure 5B-1 is a graphical representation of the influence of maximum roll radius on the distribution of compressive stresses for a roll with 460 wraps; 2500 wraps and 5000 wraps;

Figure 5B-2 is a graphical representation of the influence of maximum roll radius on the distribution of compressive stresses for a roll with 50000 wraps;

Figure 6-1 is a graphical representation of the distribution of circumferential and radial strains for 10 wraps along the roll radius of a wrapped thick walled cylinder with a constant reeling take-up stress;

Figure 6-2 is a graphical representation of the distribution of circumferential and radial strains for 50 wraps along the roll radius of a wrapped thick walled cylinder with a constant reeling take-up stress;

Figure 6-3 is a graphical representation of the distribution of circumferential and radial strains for 460 wraps along the roll radius of a wrapped thick walled cylinder with a constant reeling take-up stress;

Figure 7-1 is a graphical representation of EFL along the roll radius of a wrapped buffer tube for 10 wraps, and 460 wraps with a constant reeling take-up stress;

Figure 7-2 is a graphical representation of EFL along the roll radius of a wrapped buffer tube for 2500 wraps with a constant reeling take-up stress;

Figure 8 is a graphical representation of a parabolic decay in tensile take-up stress at a constant tensile load, a slowly decaying tensile load and a rapidly decaying tensile load;

Figure 9A-1 is a graphical representation of circumferential stress distribution for 10 wraps along the roll radius using an analytical model;

Figure 9A-2 is a graphical representation of radial stress distribution for 10 wraps along the roll radius using an analytical model;

Figure 9A-3 is a graphical representation of the circumferential and radial stress distributions for 10 wraps along the roll radius using an analytical model;

Figure 9B-1 is a graphical representation of the circumferential and radial stress distributions for 10 wraps along the roll radius using two different analytical models;

Figure 9B-2 is a graphical representation of the circumferential and radial stress distributions for 2460 wraps along the roll radius using two different analytical models;

Figure 9C-1 is a graphical representation of the circumferential and radial strain distributions for 10 wraps along the roll radius using two different analytical models;

Figure 9C-2 is a graphical representation of the circumferential and radial strain distributions for 2460 wraps along the roll radius using two different analytical models;

Figure 10 is a graphical representation of proposed variable angular velocities to control the EFL distribution in rolls of buffer tubes on soft and rigid spool cores;

Figure 11 is a diagrammatical representation of the relationship between Tensile Stress, Shrinkage, Time on the Reel and Creep of a buffer tube;

Figure 12 is a graphical representation of shapes of circumferential and radial stresses as compared to roll radius with varying parameters;

Figure 13 is a tabular representation of shapes of circumferential stress curves as a function of the parameters α (Decay in the Take-up Stress) and β (Core or Pad-on-the-core Stiffness);

Figure 14A is a diagrammatical representation of a finite element mesh model for an initially coiled model used in an analysis of the present invention;

Figure 14B is a diagrammatical representation of the finite element mesh model shown in Figure 14A after deformation under a load;

Figure 14C is a graphical representation of circumferential and radial stress distributions of the model in Figure 14A under a load;

Figure 15A is a diagrammatical representation of a finite element model and mesh used for a dynamic winding simulation in the development of the present invention;

Figure 15B is a graphical representation of curves representing the application of the tension and angular velocity for the dynamic winding model shown in Figure 15A;